

# OPERATING SUMMARY

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## TOWN OF **MEAFORD**

WATER POLLUTION CONTROL PLANT and  
WATER TREATMENT PLANT

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MEAFORD  
WATER POLLUTION CONTROL PLANT  
and  
WATER TREATMENT PLANT

operated for

THE TOWN OF MEAFORD

by the

MINISTRY OF THE ENVIRONMENT

1974 ANNUAL OPERATING SUMMARY

prepared by

Plant Performance Unit

TECHNICAL SERVICES BRANCH

T. Cross, Director

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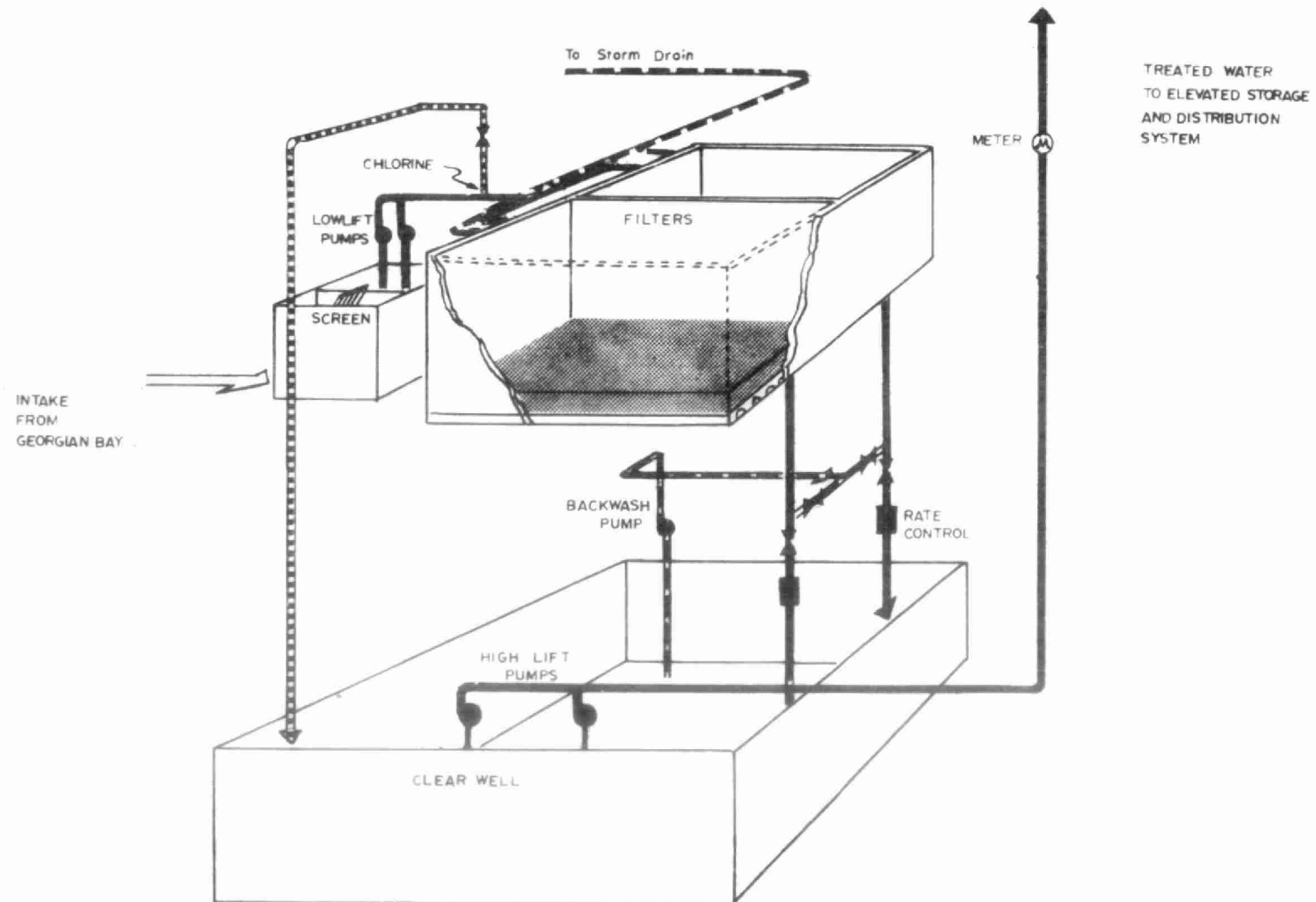
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### WATER POLLUTION CONTROL PLANT

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## **WATER TREATMENT PLANT**

# TOWN OF MEAFORD WTP



## DESIGN DATA

PROJECT Town of Meaford WTP

PROJECT NO. 6-0029-59

DESIGN CAPACITY 2.88 mgd

### CAPACITY OF UNITS

Low Lift - Two 3 mgd @ 55'

Filters - 2.88 mgd @ 1.7 gpm/ft<sup>2</sup>

High Lift - One 2.0 mgd @ 172'

One 2.7 mgd @ 187'

### FILTER

Type: Graded Anthrafilt

Size: Two 25' x 25'

Surface Wash: Palmer

### CLEARWELL

Capacity: 200,000 gal.

### HIGH LIFT PUMPS

#1 H. L. Pump

Type: Fairbanks-Morse

Size: One 1170 gpm @ 172'

#2 H. L. Pump

Type: DeLaval

Size: 2000 gpm @ 180'

Auxilliary Power: GMC Diesel

### BACKWASH PUMP

Type: Fairbanks-Morse

Size: One 6500 gpm @ 38'

### RAW WATER SOURCE

Nottawasaga Bay

### INTAKE

- depth about 22 ft.

- 877' of 30" pipe

### SCREENING

Chamber Size: 15' x 5' x 14'

Screens: Two 5' x 11'

### LOW LIFT PUMPS

Type: Fairbanks-Morse vertical turbine

Size: Two 2100 gpm @ 55'

Auxilliary Power: Chrysler Industrial  
Engine (on #2 L. L. pump)

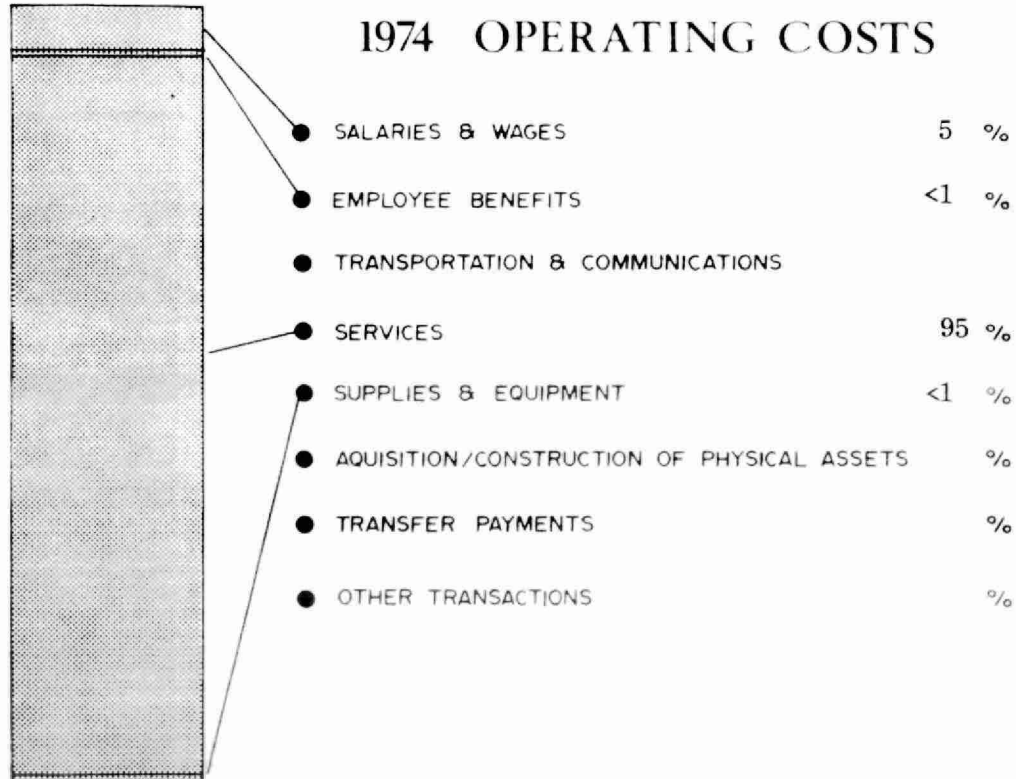
### CHLORINATOR

Type: F-P gas

Size: One 40 lb/day

# ANNUAL COSTS

## 1974 OPERATING COSTS



## YEARLY OPERATING COSTS

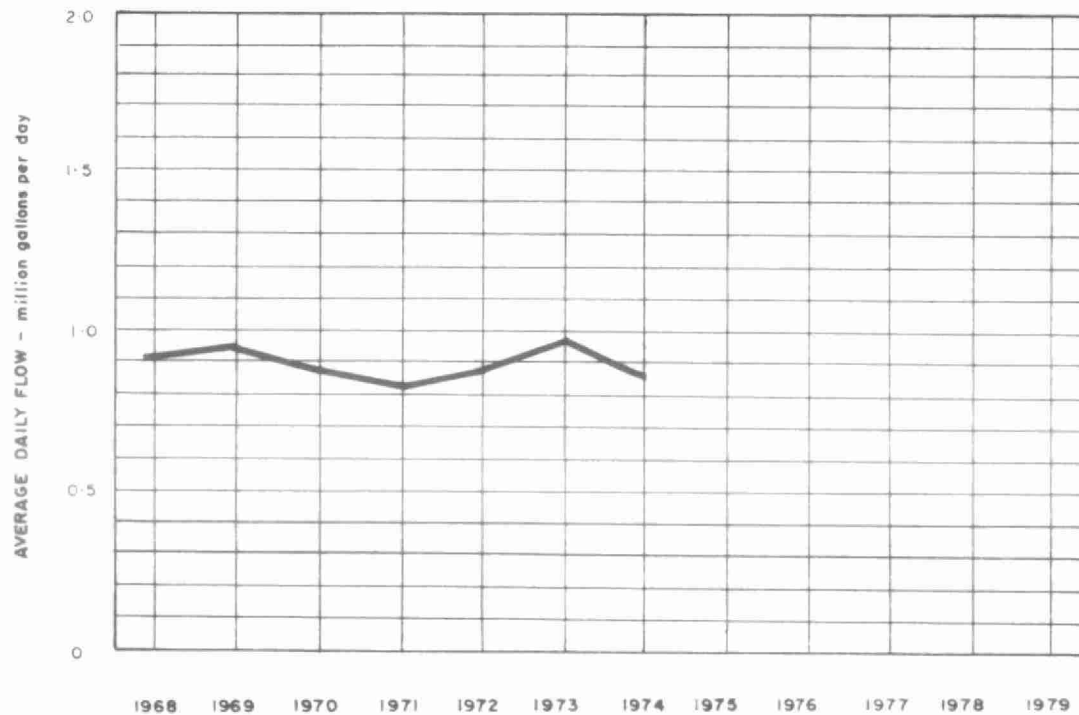
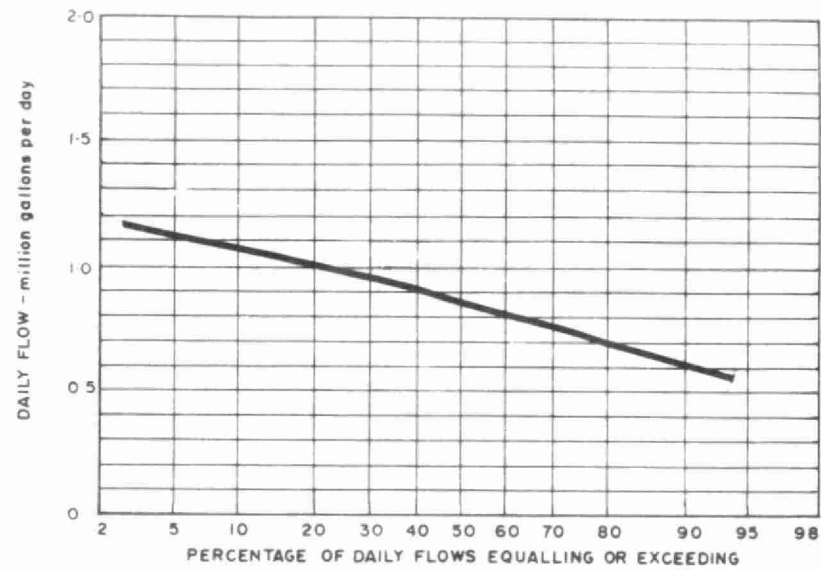
| YEAR | WATER TREATED<br>in million gallons | TOTAL<br>OPERATING COSTS | UNIT COSTS         |
|------|-------------------------------------|--------------------------|--------------------|
|      |                                     |                          | cents per 1000 gal |
| 1969 | 339                                 | 19,894                   | 5                  |
| 1970 | 323                                 | 19,491                   | 6                  |
| 1971 | 321                                 | 19,576                   | 6                  |
| 1972 | 321                                 | 19,764                   | 6                  |
| 1973 | 349                                 | 18,460                   | 5                  |
| 1974 | 320                                 | 25,022                   | 8                  |



# OPERATING EXPENDITURES

|  |             |           |
|--|-------------|-----------|
| Regular Staff                                    | \$ -        | \$        |
| Casual (Unclassified) Staff                      | 1,195       |           |
| TOTAL SALARIES AND WAGES                         |             | 1,195     |
| TOTAL EMPLOYEE BENEFITS                          |             | 34        |
| TOTAL TRANSPORTATION AND COMMUNICATIONS          |             |           |
| Insurance  | 970         |           |
| Sludge Haulage                                   |             |           |
| Repairs and Maintenance                          | 18,364      |           |
| Other Services                                   | 4,417       |           |
| TOTAL SERVICES                                   |             | 23,751    |
| Machinery and Equipment                          |             |           |
| Chemicals  |             |           |
| Utilities  |             |           |
| Other Supplies and Equipment                     | 42          |           |
| TOTAL SUPPLIES AND EQUIPMENT                     |             | 42        |
| TOTAL AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS |             |           |
| TOTAL TRANSFER PAYMENTS                          |             |           |
| OTHER TRANSACTIONS                               |             |           |
| GRAND TOTAL                                      | GRAND TOTAL | \$ 25,022 |

# PROCESS DATA FLOWS

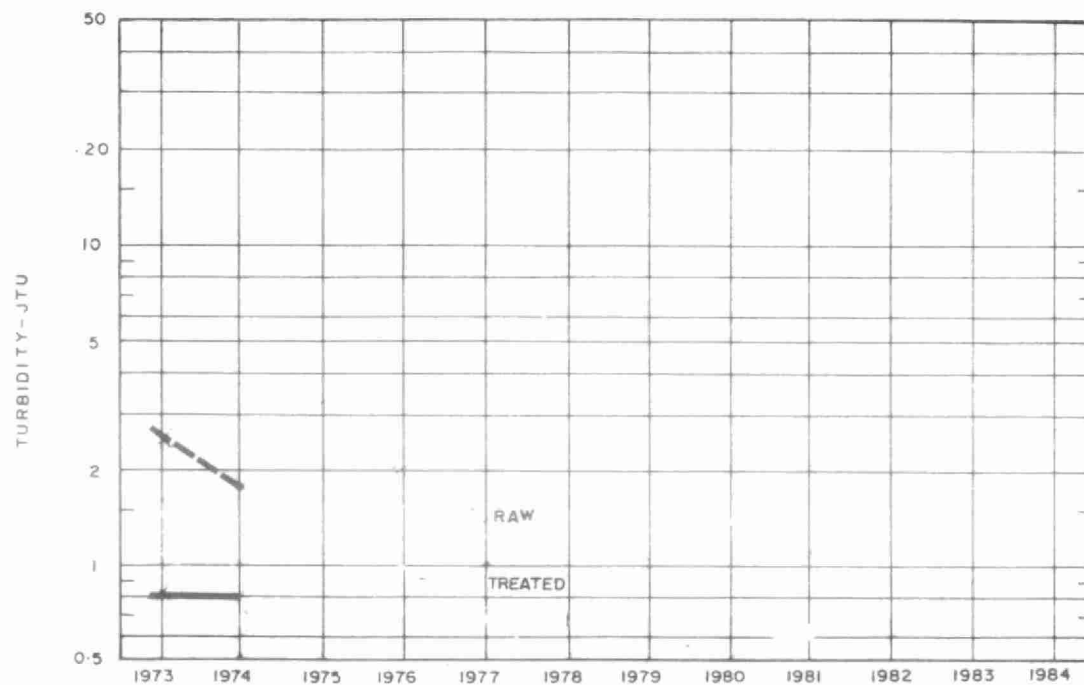
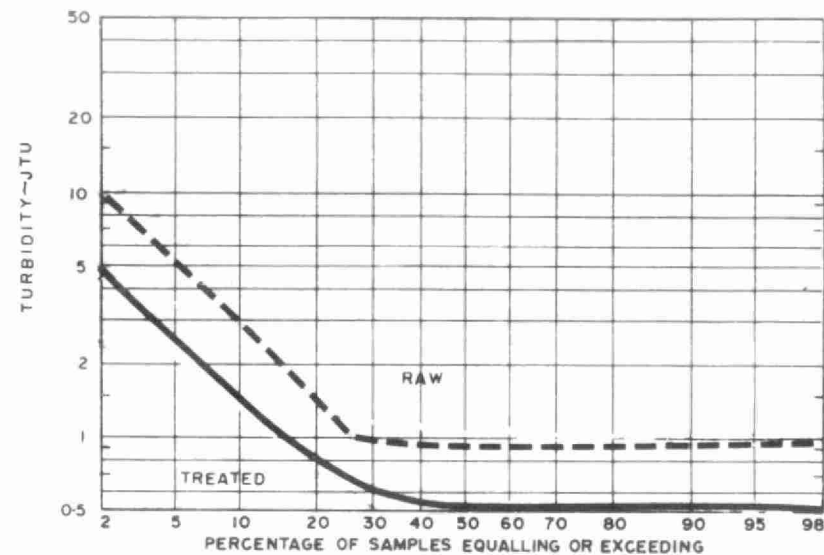


DESIGN CAPACITY 2.9 MGD

## PLANT PERFORMANCE

| MONTH | FLOWS                                    |  |  |                        | RAW WATER                     |                                   | TREATED WATER  |                 |                       |                       |                |                |
|-------|--|--|--|------------------------|-------------------------------|-----------------------------------|----------------|-----------------|-----------------------|-----------------------|----------------|----------------|
|       | TOTAL<br>PLANT OUTPUT<br>million gallons | AVERAGE<br>DAILY FLOW<br>million gallons | MAXIMUM<br>DAY'S FLOW<br>million gallons | MAXIMUM<br>RATE<br>mgd | TURBIDITY<br>(AVERAGE)<br>FTU | COLOUR<br>(AVERAGE)<br>App. units | TURBIDITY      |                 | COLOUR                |                       | TEMPERATURE    |                |
|       |  |  |  |                        |                               |                                   | AVERAGE<br>FTU | MAXIMUM<br>FTU  | AVERAGE<br>App. units | MAXIMUM<br>App. units | AVERAGE<br>° F | MAXIMUM<br>° F |
| JAN   | 28.14                                    | .91                                      | 1.07                                     | 2.02                   | 1.7                           |                                   | .8             | 5.2             |                       |                       | 31             | 31             |
| FEB   | 26.00                                    | .93                                      | 1.12                                     | 2.02                   | 2.4                           |                                   | 1.2            | 10.0            |                       |                       | 31             | 31             |
| MAR   | 28.07                                    | .90                                      | 1.06                                     | 2.02                   | 3.6                           |                                   | 1.5            | 7.4             | <5                    | <5                    | 32             | 33             |
| APR   | 27.64                                    | .92                                      | 1.08                                     | 2.02                   | 2.2                           |                                   | 1.1            | 7.9             |                       |                       | 33             | 36             |
| MAY   | 28.25                                    | .91                                      | 1.10                                     |                        | 1.5                           |                                   | .8             | 2.5             |                       |                       | 38             | 41             |
| JUNE  | 29.28                                    | .98                                      | 1.32                                     |                        | 1.0                           |                                   | .5             | .6              |                       |                       | 43             | 50             |
| JULY  | 34.57                                    | 1.12                                     | 1.56                                     |                        | 1.2                           |                                   | .6             | 1.1             |                       |                       | 59             | 64             |
| AUG   | 29.32                                    | .95                                      | 1.36                                     |                        | 1.0                           |                                   | .5             | 8.0             |                       |                       | 66             | 68             |
| SEPT  | 22.92                                    | .76                                      | .93                                      |                        | 1.1                           |                                   | .5             | 1.1             |                       |                       | 60             | 67             |
| OCT   | 22.80                                    | .73                                      | .86                                      |                        | 1.5                           |                                   | .7             | 4.3             |                       |                       | 51             | 56             |
| NOV   | 21.57                                    | .72                                      | .83                                      |                        | 1.6                           |                                   | .7             | 3.9             |                       |                       | 46             | 49             |
| DEC   | 20.95                                    | .68                                      | .79                                      |                        | 1.6                           |                                   | .8             | 3.6             |                       |                       | 39             | 41             |
| TOTAL | 319.51                                   |  |  |                        |                               |                                   |                |                 |                       |                       |                |                |
| AVG.  |  | .88                                      | MAXIMUM<br>1.56                          | MAXIMUM                | 1.7                           |                                   | .8             | MAXIMUM<br>10.0 | <5                    | MAXIMUM<br><5         | 44             | MAXIMUM<br>68  |

# TURBIDITY



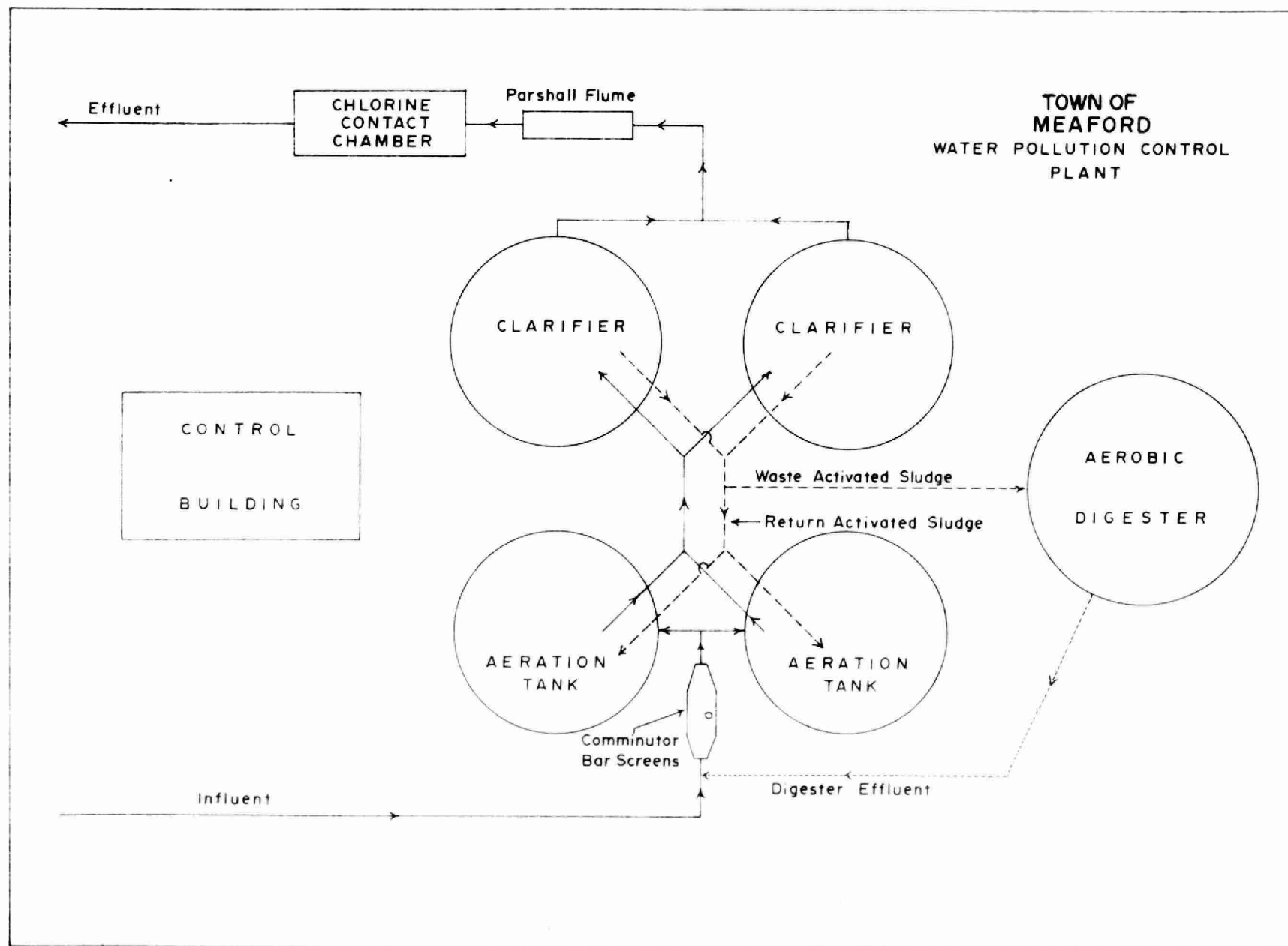
## CHLORINATION and DISINFECTION

| MONTH | RAW WATER   |       |        |          |       | PLANT EFFLUENT                   |   | DISTRIBUTION SYSTEM              |   | CHLORINATION                                  |               |                |  |
|-------|---|-------|--------|----------|-------|----------------------------------|---|----------------------------------|---|---|---------------|----------------|--|
|       | NUMBER OF SAMPLES HAVING<br>TOTAL COLIFORM ORGANISMS PER 100 ml<br>OF |       |        |          |       | NUMBER<br>OF<br>SAMPLES<br>TAKEN | NUMBER<br>HAVING<br>COLIFORM<br>ORGANISMS | NUMBER<br>OF<br>SAMPLES<br>TAKEN | NUMBER<br>HAVING<br>COLIFORM<br>ORGANISMS | TOTAL AMOUNT<br>OF<br>CHLORINE USED<br>pounds | DOSAGE        |                | RESIDUAL<br>IN PLANT<br>EFFLUENT<br>mg/l |
|       | 0   | 1 - 3 | 4 - 32 | 33 - 320 | > 320 |                                  |   |                                  |   |   | PRE -<br>mg/l | POST -<br>mg/l |  |
| JAN   | 0   | 1     | 0      | 1        | 1     | 7                                | 0   | 6                                | 0   | 302   |               | 1.0            | .4                                       |
| FEB   | 1   | 0     | 2      | 1        | 0     | 7                                | 0   | 8                                | 0   | 287   |               | 1.1            | .4                                       |
| MAR   | 1   | 1     | 0      | 1        | 0     | 7                                | 0   | 6                                | 0   | 310   |               | 1.1            | .4                                       |
| APR   | 1   | 2     | 1      | 0        | 0     | 8                                | 0   | 8                                | 0   | 297   |               | 1.1            | .4                                       |
| MAY   | 1   | 0     | 1      | 1        | 0     | 3                                | 0   | 6                                | 0   | 295   |               | 1.1            | .4                                       |
| JUNE  | 3   | 0     | 1      | 0        | 0     | 4                                | 0   | 8                                | 0   | 309   |               | 1.1            | .3                                       |
| JULY  | 4   | 1     | 0      | 0        | 0     | 5                                | 0   | 10                               | 0   | 356   |               | 1.0            | .3                                       |
| AUG   | 1   | 1     | 1      | 1        | 0     | 4                                | 0   | 8                                | 0   | 319   |               | 1.1            | .3                                       |
| SEPT  | 0   | 1     | 3      | 0        | 0     | 4                                | 0   | 8                                | 0   | 288   |               | 1.2            | .3                                       |
| OCT   | 1   | 0     | 1      | 2        | 0     | 4                                | 0   | 8                                | 0   | 276   |               | 1.2            | .3                                       |
| NOV   | 1   | 0     | 1      | 1        | 1     | 4                                | 0   | 8                                | 0   | 247   |               | 1.1            | .3                                       |
| DEC   | 0   | 0     | 0      | 4        | 0     | 4                                | 0   | 8                                | 0   | 230   |               | 1.1            | .3                                       |
| TOTAL | 14  | 7     | 11     | 12       | 2     | 61                               | 0   | 92                               | 0   | 3516  |               |                |  |
| AVG.  | 8<br>(NOTE - Average shown is the GEOMETRIC MEAN)                     |       |        |          |       |                                  |   |                                  |   | 10<br>pounds per day                          |               | 1.1            | .4                                       |

## WATER QUALITY

| PROPERTY                                 | RAW WATER         |         |         |         | TREATED WATER     |         |         |         | DESIRABLE STANDARDS |
|--|-------------------|---------|---------|---------|-------------------|---------|---------|---------|---------------------|
|  | NUMBER OF SAMPLES | AVERAGE | MAXIMUM | MINIMUM | NUMBER OF SAMPLES | AVERAGE | MAXIMUM | MINIMUM |                     |
| HARDNESS<br>in mg/l as $\text{CaCO}_3$   | 2                 | 90      | 100     | 80      | 2                 | 92      | 100     | 84      | 80 - 100            |
| ALKALINITY<br>in mg/l as $\text{CaCO}_3$ | 2                 | 72      | 72      | 72      | 2                 | 70      | 71      | 70      | 30 - 100            |
| IRON<br>in mg/l Fe                       | 2                 | .23     | .45     | <.05    | 2                 | <<.05   | .05     | ≤.05    | Less than 0.3       |
| CHLORIDE<br>in mg/l $\text{Cl}^-$        | 2                 | 5       | 6       | 5       | 2                 | 6       | 6       | 6       | Less than 250       |
| pH<br>in pH units                        | 2                 | 8.0     | 8.2     | 7.8     | 2                 | 7.9     | 8.1     | 7.7     | 7.0 - 8.5           |

## **WATER POLLUTION CONTROL PLANT**





## DESIGN DATA

PROJECT Town of Meaford WPCP

PROJECT NO. 1-0003-66

TREATMENT High Rate Activated Sludge

DESIGN FLOW 0.86 mgd

### COMMUNUTOR

Type: Condux type 400  
Max. Capacity - 2.58 mgd

### AERATION TANKS

2 tanks, each 30'0" dia x 19'3" swd  
Capacity: 170,000 I.G. total  
Detention: 4.7 hours

### Aerators

Type: 2 mechanical Ames-Crosta  
driven by 50 hp electric motors

### SECONDARY CLARIFIER

2 clarifiers 40'0" dia x 10'9" avg. swd  
Capacity: 168,000 I.G. total  
Detention: 4.7 hours  
Loading: Surface 340 gal/ft<sup>2</sup>/day  
Return Sludge Pumps: 2, 720 IGPM  
@ 30' tdh

### CHLORINE CONTACT CHAMBER

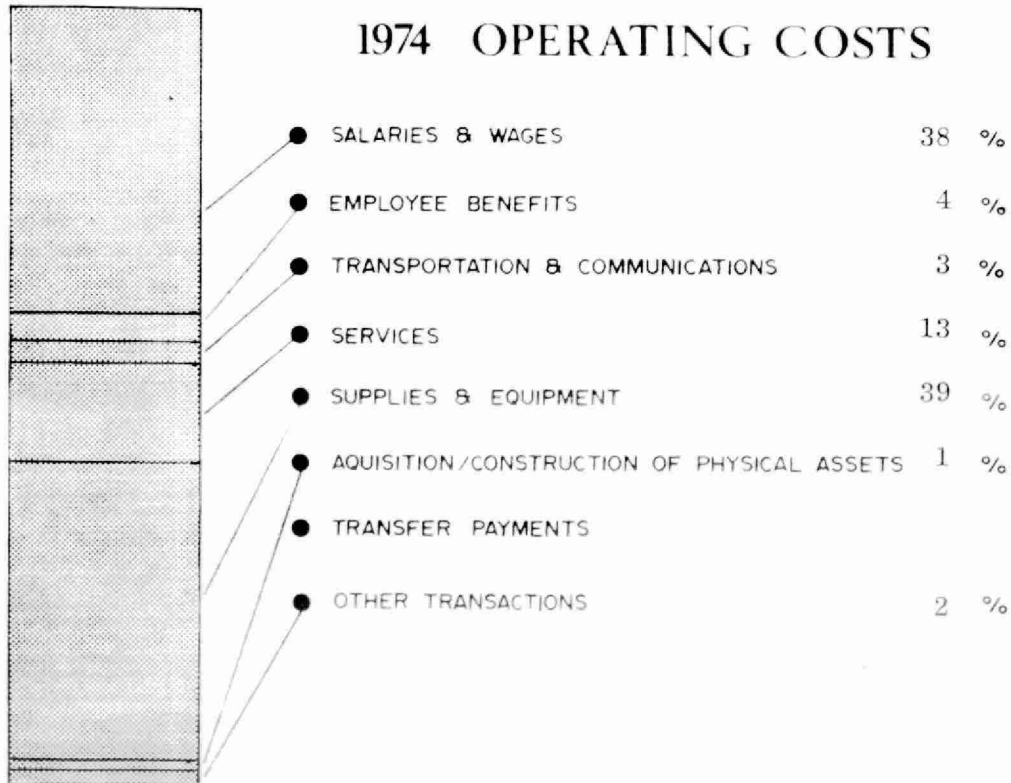
Size: 24' x 8' x 6' 6", 8400 gallons  
Detention Time: 14 min.

### AEROBIC DIGESTER

Dimensions: 50'0" dia x 18'6" avg swd.  
Capacity: 227,000 I.G.  
Aerator: 1 at 50 rpm

# ANNUAL COSTS

## 1974 OPERATING COSTS



## YEARLY OPERATING COSTS

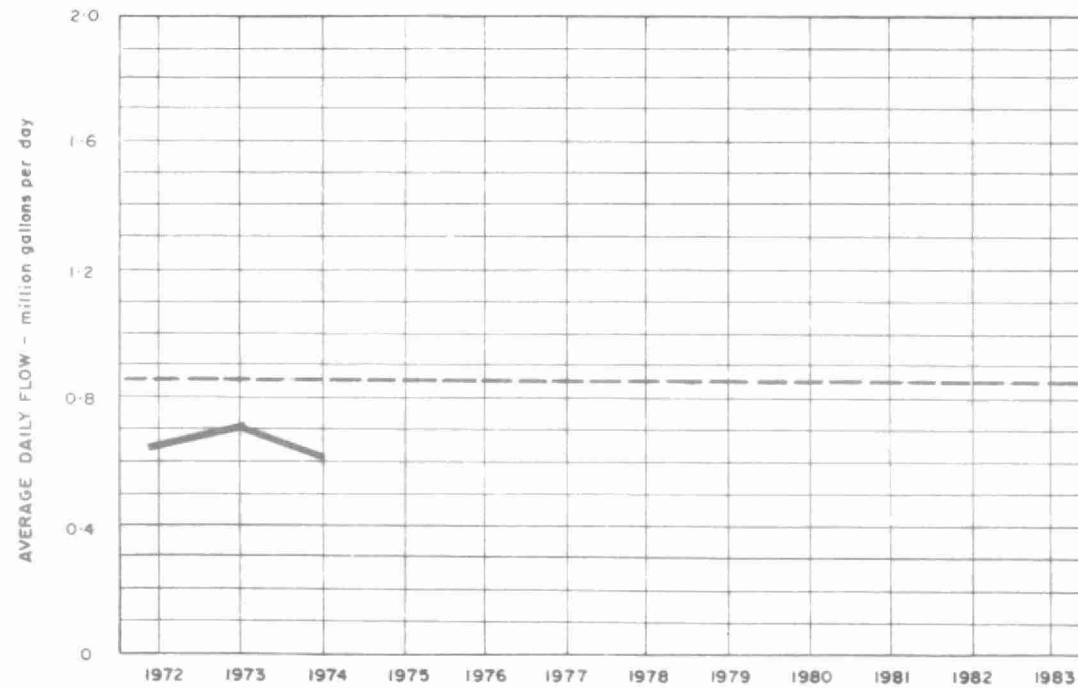
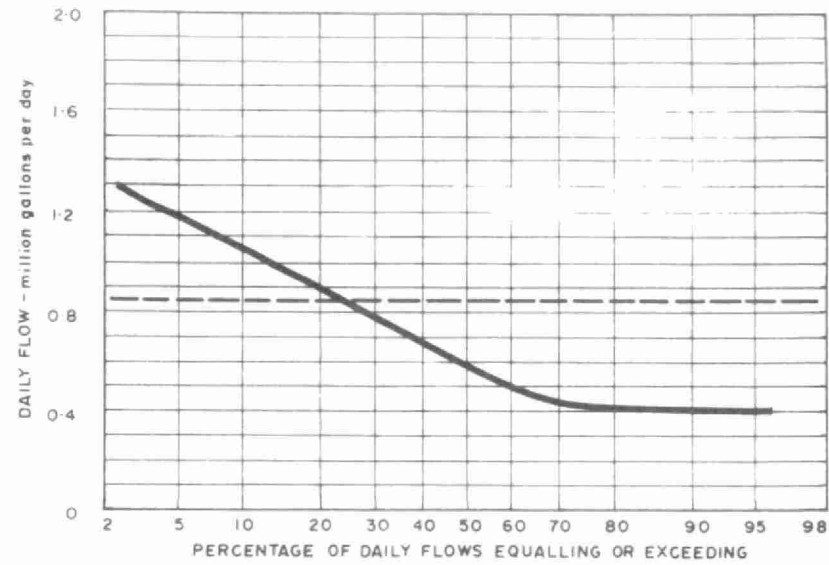
| YEAR | SEWAGE TREATED<br>in million gallons | TOTAL<br>OPERATING COSTS | UNIT COSTS |          |
|------|--------------------------------------|--------------------------|------------|----------|
|      |                                      |                          | \$/M G     | ¢/lb BOD |
| 1974 | 225.5                                | 54,361                   | 241        | 27       |

## OPERATING EXPENDITURES

|  |               |                  |
|--|---------------|------------------|
| Regular Staff                                    | \$ 20,672     | \$               |
| Casual (Unclassified) Staff                      | <u>239</u>    |                  |
| TOTAL SALARIES AND WAGES                         |               | <u>20,911</u>    |
| TOTAL EMPLOYEE BENEFITS                          |               | <u>2,107</u>     |
| TOTAL TRANSPORTATION AND COMMUNICATIONS          |               | <u>1,434</u>     |
| Insurance  | <u>719</u>    |                  |
| Sludge Haulage                                   | <u>2,968</u>  |                  |
| Repairs and Maintenance                          | <u>3,546</u>  |                  |
| Other Services                                   | <u>243</u>    |                  |
| TOTAL SERVICES                                   |               | <u>7,476</u>     |
| Machinery and Equipment                          | <u>2,653</u>  |                  |
| Chemicals  | <u>1,191</u>  |                  |
| Utilities  | <u>12,147</u> |                  |
| Other Supplies and Equipment                     | <u>5,109</u>  |                  |
| TOTAL SUPPLIES AND EQUIPMENT                     |               | <u>21,100</u>    |
| TOTAL AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS |               | <u>415</u>       |
| TOTAL TRANSFER PAYMENTS                          |               | <u>-</u>         |
| OTHER TRANSACTIONS                               |               | <u>918</u>       |
| GRAND TOTAL                                      | GRAND TOTAL   | \$ <u>54,361</u> |

# PROCESS DATA

## FLOWS

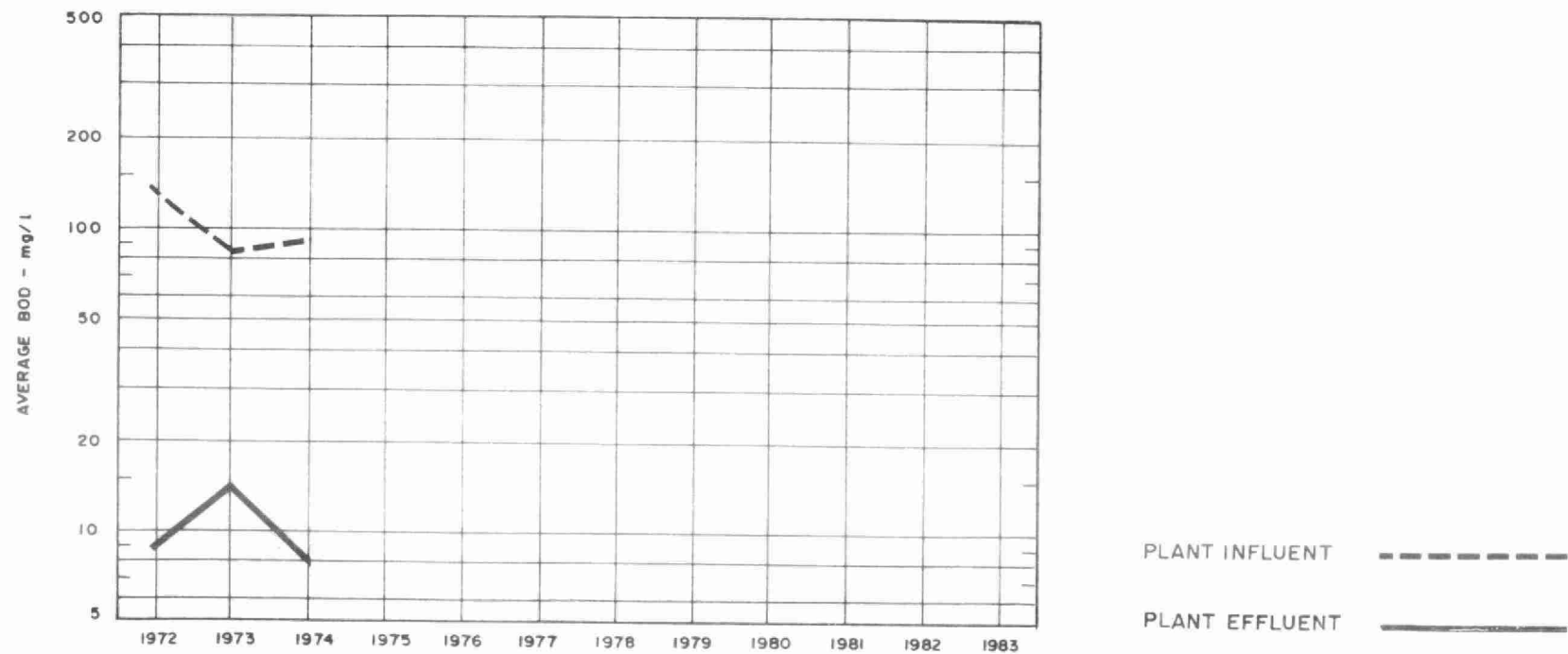
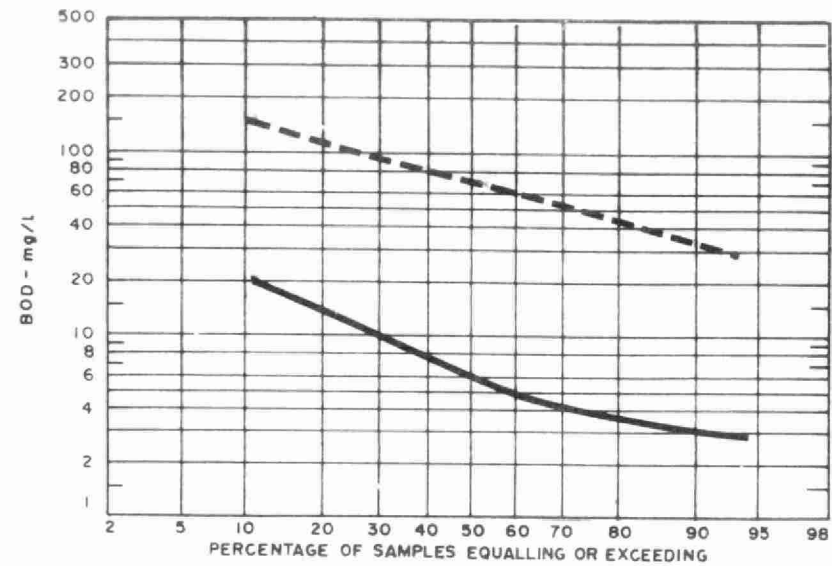


DESIGN CAPACITY - - - - -

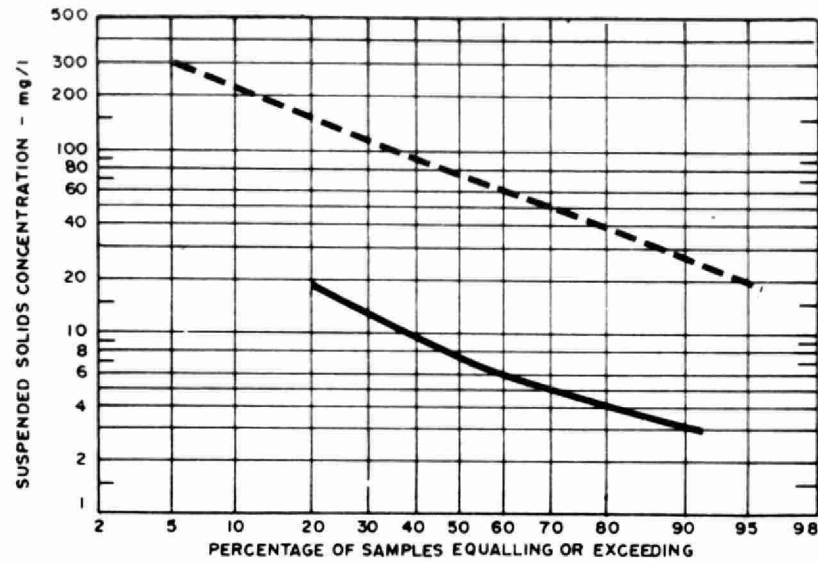
## PLANT PERFORMANCE

| MONTH             | FLOWS                         |                            |                       | BIOCHEMICAL OXYGEN DEMAND |                  |           |                           | SUSPENDED SOLIDS |                  |           |                           | PHOSPHORUS         |                    |
|-------------------|-------------------------------|----------------------------|-----------------------|---------------------------|------------------|-----------|---------------------------|------------------|------------------|-----------|---------------------------|--------------------|--------------------|
|                   | TOTAL FLOW<br>million gallons | AVERAGE<br>DAY<br>mil. gal | MAXIMUM<br>DAY<br>mgd | INFLUENT<br>mg/l          | EFFLUENT<br>mg/l | REDUCTION |                           | INFLUENT<br>mg/l | EFFLUENT<br>mg/l | REDUCTION |                           | INFLUENT<br>mg/l P | EFFLUENT<br>mg/l P |
|                   |                               |                            |                       |                           |                  | %         | 10 <sup>3</sup><br>pounds |                  |                  | %         | 10 <sup>3</sup><br>pounds |                    |                    |
| JAN               | 23.77                         | .77                        | 1.9                   | 95                        | 28               | 71        | 16                        | 159              | 19               | 88        | 33                        | 2.7                | 2.1                |
| FEB               | 18.46                         | .66                        | 1.1                   | 440                       |                  |           |                           | 78               | 19               | 76        | 11                        | 2.9                |                    |
| MAR               | 20.39                         | .66                        | 1.8                   | 60                        | 16               | 73        | 9                         | 138              | 22               | 84        | 24                        | 7.8                | 3.9                |
| APR               | 22.17                         | .74                        | 1.5                   | 115                       | 10               | 91        | 23                        | 130              | 17               | 87        | 25                        | 6.9                | 2.9                |
| MAY               | 19.44                         | .63                        | 1.3                   |                           |                  |           |                           | 173              | 6                | 97        | 32                        |                    |                    |
| JUNE              | 23.24                         | .77                        | .7                    | 75                        | 4                | 95        | 16                        | 135              | 6                | 96        | 30                        | 7.6                | 2.0                |
| JULY              | 15.78                         | .51                        | .8                    | 55                        | 4                | 93        | 8                         | 45               | 6                | 87        | 6                         | 9.6                | 3.0                |
| AUG               | 17.76                         | .57                        | 1.0                   | 140                       | 6                | 96        | 24                        | 133              | 5                | 96        | 23                        | 6.7                | 2.2                |
| SEPT              | 16.08                         | .54                        | .8                    | 60                        | 5                | 92        | 9                         | 164              | 7                | 96        | 25                        | 6.5                | 2.0                |
| OCT               | 16.84                         | .54                        | 1.2                   | 32                        | 3                | 91        | 5                         | 39               | 10               | 74        | 5                         | 3.5                | 1.8                |
| NOV               | 17.00                         | .57                        | .9                    | 38                        | 3                | 92        | 6                         | 44               | 4                | 91        | 7                         | 7.2                | .8                 |
| DEC               | 14.59                         | .47                        | .6                    | 55                        | 5                | 91        | 7                         | 56               | 7                | 88        | 7                         | 3.6                | 1.9                |
| TOTAL             | 225.52                        | -                          | -                     | -                         | -                | -         |                           | -                | -                | -         | 219                       | -                  | -                  |
| AVG.              |                               | .62                        | MAXIMUM<br>1.9        | 99                        | 8                | 92        | 17                        | 108              | 11               | 90        | 18                        | 6.3                | 2.4                |
| No. of<br>Samples | -                             | -                          | -                     | 17                        | 16               | -         | -                         | 69               | 67               | -         | -                         | 17                 | 16                 |

# BIOCHEMICAL OXYGEN DEMAND



# SUSPENDED SOLIDS

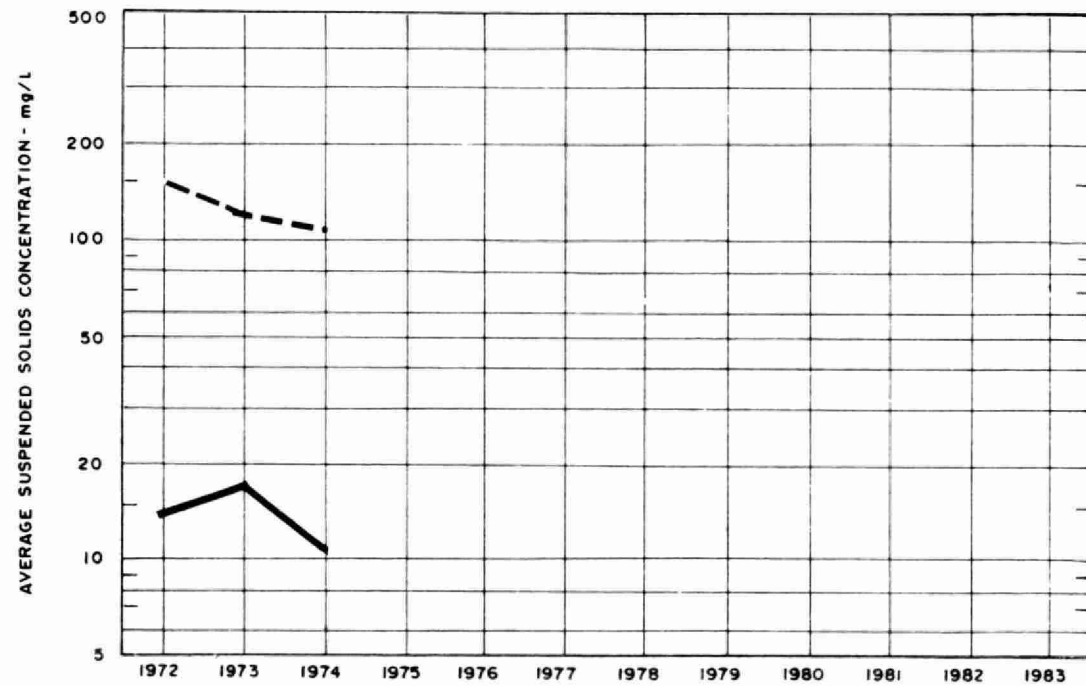


PLANT INFLUENT

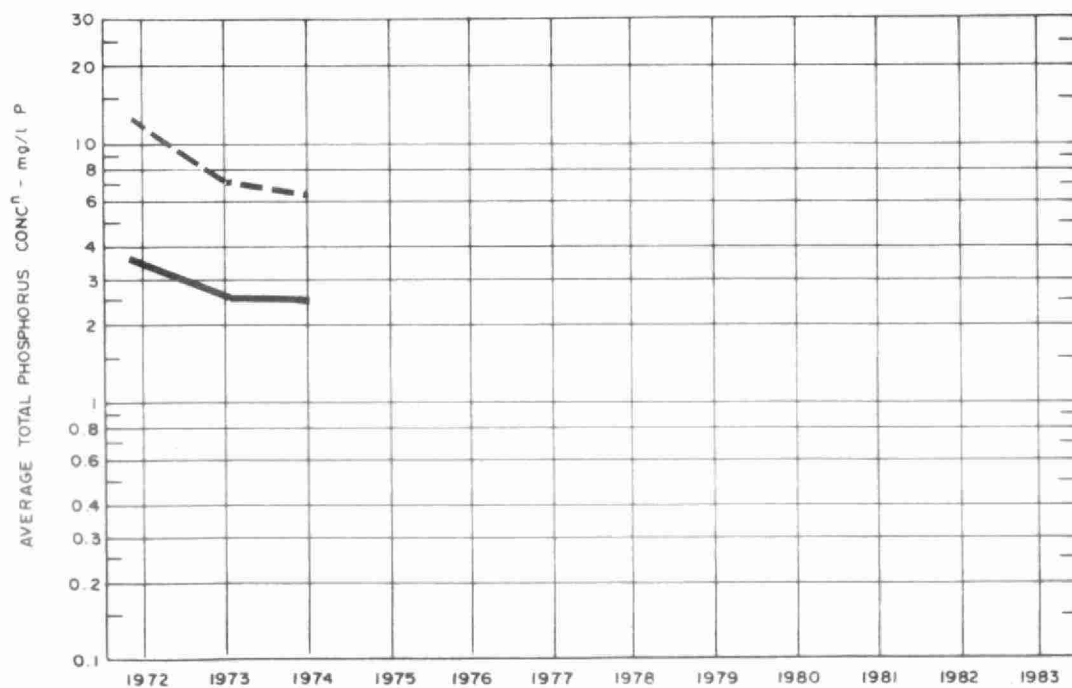
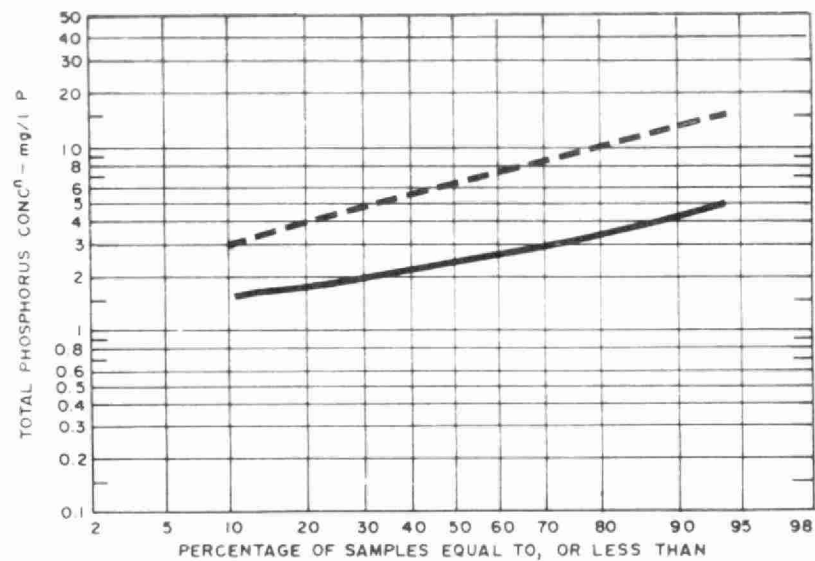
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PLANT EFFLUENT

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# PHOSPHORUS



PLANT INFLUENT -----  
PLANT EFFLUENT \_\_\_\_\_



## TREATMENT DATA

| MONTH | GRIT                  | CHLORINATION         |             | AERATION  |                   |   | WASTE SLUDGE            |                  |             | AEROBIC DIGESTER        |                  |            |               |
|-------|-----------------------|----------------------|-------------|-----------|-------------------|---|-------------------------|------------------|-------------|-------------------------|------------------|------------|---------------|
|       | QUANTITY REMOVED      | Cl <sub>2</sub> USED | AVG. DOSAGE | MLSS CONC | F/M               | AIR USED                                  | QUANTITY                | SUSPENDED SOLIDS | VOL. SOLIDS | QUANTITY REMOVED        | SUSPENDED SOLIDS | VOL SOLIDS | AMOUNT HAULED |
|       | cubic feet            | pounds               | mg/l        | mg/l      | day <sup>-1</sup> | $\frac{1000 \text{ ft}^3}{\text{lb BOD}}$ | 10 <sup>3</sup> gallons | mg/l             | %           | 10 <sup>3</sup> gallons | mg/l             | %          | cubic yards   |
| JAN   | 0                     | 619                  | 2.6         | 2200      | .14               |   | 0                       | 6900             | 73          | 23.0                    | 10200            | 59         | 138           |
| FEB   | 0                     | 443                  | 2.4         | 2700      | .48               |   | 1.4                     | 6500             | 70          | 18.0                    | 10500            | 60         | 107           |
| MAR   | 0                     | 575                  | 2.8         | 2500      | .07               |   | 2.6                     | 5200             | 67          | 20.0                    | 12000            | 56         | 120           |
| APR   | 4                     | 597                  | 2.7         | 2800      | .13               |   | 4.2                     | 4800             | 63          | 25.3                    | 15800            | 56         | 152           |
| MAY   | 0                     | 451                  | 2.3         | 2200      |                   |   | 3.4                     | 4900             | 66          | 27.9                    | 11700            | 55         | 166           |
| JUNE  | 0                     | 382                  | 1.6         | 2700      | .09               |   | 0                       | 6900             | 56          | 91.8                    | 16300            | 53         | 547           |
| JULY  | 0                     | 418                  | 2.6         | 2000      | .06               |   | 1.0                     | 3600             | 61          | 44.3                    | 13900            | 51         | 263           |
| AUG   | 8                     | 486                  | 2.7         | 1400      | .24               |   | 2.4                     | 4500             | 57          | 54.1                    | 11700            | 51         | 323           |
| SEPT  | 0                     | 434                  | 2.7         | 2100      | .07               |   | 3.1                     | 4400             | 61          | 39.1                    | 10700            | 50         | 232           |
| OCT   | 0                     | 447                  | 2.7         | 2000      | .04               |   | 2.5                     | 5200             | 64          | 42.4                    | 9400             | 52         | 252           |
| NOV   | 3                     | 376                  | 2.2         | 2900      | .03               |   | 0                       | 6000             | 60          | 20.0                    | 9800             | 51         | 119           |
| DEC   | 0                     | 301                  | 2.1         | 1800      | .06               |   | 0                       | 3500             | 69          | 6.2                     | 10000            | 51         | 37            |
| TOTAL | 15                    | 5529                 | -           | -         | -                 | -   | 20.6                    | -                | -           | 412.1                   | -                | -          | 2456          |
| AVG.  | .07<br>cu. ft/mil gal | 461                  | 2.4         | 2300      | .13               |   |                         | 5200             | 64          | 34.3                    | 11800            | 54         | 205           |

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